Improving the Social Normative Influence of Self-Prophecy:

The Effect of a Perceived Audience and the Moderating Role of Self-Construal

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ABSTRACT

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Kimberly Duval

Self-prophecy (SP) is a viable marketing strategy shown to increase the prevalence of socially normative behaviours in a variety of contexts, by simply asking people to make a prediction regarding their performance of the target behaviour. The goal of the current research was to extend SP effects in a consumer behaviour context for increasing "green" product consumption and to investigate whether the efficacy of a SP-based advertisement can be influenced by the use of an audience cue and the recipient's self-construal (i.e., independence vs. interdependence). In study 1, results showed that compared to a traditional text-only SP advertisement, an SP advertisement with an audience cue led to greater preference for sustainable products. Results from study 2 showed that self-construal did not influence susceptibility to a text-only SP message, however greater interdependence led to greater preference for sustainable products after exposure to an SP advertisement with an audience cue. Findings suggest that SP-based advertising may be useful for increasing the prevalence of sustainable product consumption, and that the delivery of an SP-based message can be improved by including a subtle audience cue.

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Growing concern over the impact humans are having on the environment, in part due to the production and consumption of unsafe consumer products, has resulted in the proliferation of "green" options in the market place (Mintel, 2006). Although consumers express positive attitudes for and intentions towards choosing environmentally-safer alternatives, actual adoption of sustainable product options remains low (Mintel, 2011; Ungar, 1994). Research indicates that targeting the social value and expectation for environmental behaviours rather than targeting consumer attitudes directly is a more effect strategy for reaching consumers (Gupta & Ogden, 2009; Ungar, 1994).

Self-prophecy (SP) is a social influence technique, whereby simply asking a person to predict their future behaviour in a given context leads to significant and prolonged behavioural change in the direction of related social norms (i.e., what a person *should* do). The efficacy of SP to motivate norm-consistent behaviours is well-established with effect sizes ranging from $r = .08$ to $r = .40$ (Spangenberg & Greenwald, 1999; see also Dholakia, 2010). Sherman (1980) first identified the effects of SP in an experiment showing that individuals who made an initial behavioural prediction increased their likelihood of engaging in the behaviour (i.e., volunteering for a charity), compared to others who made no self-prediction. Importantly, Sherman noted that people tended to over-predict their behaviour in a socially desirable or normative direction, thus motivating them to engage in norm-consistent behaviours more than they typically had or would have otherwise, in what he referred to as, "the self-erasing nature of errors of prediction" (Sherman, 1980).

The significance of the social normative component of SP, as well as its applied simplicity, has since made it a particularly relevant intervention for social marketing researchers aiming to increase socially responsible behaviours. Accordingly, the effect of SP has been established in a variety of contexts, in both laboratory and field experiments across diverse normative behaviours, such as reducing cheating among college students (Spangenberg & Obermiller, 1996) choosing a healthy snack (Sprott, Spangenberg, & Fisher 2003) and improving attendance to a health assessment (Sprott, Smith, Spangenberg & Freson, 2004). Furthermore, Spangenberg and colleagues have shown the efficient application of SP through mass-communicated advertising to increase recycling rates at an organization and attendance to a gym facility (Spangenberg, Sprott, Grohmann, & Smith, 2003). Despite extensive research on the topic and discussion of the potential for extension to environmentally-friendly behaviours (Dholakia, 2010; Spangenberg et al., 2003), no study has yet evaluated the application of SP in a consumer-based context for increasing green product consumption.

Researchers have proposed a number of different theories to account for the effect of SP (c.f. Sprott, Spangenberg, Block, Fitzsimons, Morwitz, & Williams, 2006). However, more recent empirical evidence strongly supports an integrated cognitive dissonance framework (Spangenberg et al., 2003; Spangenberg & Sprott, 2006; Spangenberg, Sprott, Knuff, Smith, Obermiller, & Greenwald, 2012). Specifically, the dissonance-based view of SP holds that the prediction request evokes a value-action discrepancy, whereby both relevant social norms as well as one's prior behavioural noncompliance with those norms become salient. This discrepancy results in cognitive dissonance by threatening an individual's self-concept as a morally good, competent, and

consistent person (Aronson, 1969, 1992). In turn, dissonance evoked by the self-prediction motivates subsequent normative behaviour to reduce dissonance and regain self-consistency.

Based on this dissonance framework, researchers have suggested that factors that increase the social adjustive nature of the prediction request (e.g., the saliency or reliance on social norms) may lead to increased behavioural conformity from self-prediction (Spangenberg & Sprott, 2006; Sprott et al., 2003). The purpose of the current research is therefore to examine two such factors. First, this research will investigate whether the effect of SP text-based advertisements can be improved by strengthening the social normative influence of the prediction request through an implied presence of an audience. Second, this research will examine whether self-construal—an individual difference factor that determines the extent to which the social context influences one's self-concept and self-expression (Markus & Kitayama 1991)—moderates the effect of SP on behaviour. This research also aims to extend the applicability of SP to the consumer behaviour of purchasing sustainable products.

Self-Prophecy in Mass-Communicated Advertising

Marketing researchers have recently demonstrated SP effects through large-scale text-based advertising campaigns demonstrating that this strategy may also be effective for increasing green consumption behaviours. In two field experiments, Spangenberg et al. (2003) evaluated SP for increasing recycling rates and gym attendance. Specifically, in the first study, Spangenberg et al. (2003) displayed the prediction request, "Ask Yourself… Will You Recycle?" on actual-sized wooden stop signs that were hung at the main entrances of a university classroom building, as well as posted on bulletin boards in

each of the classrooms for a period of five days. Results showed nearly double the rates of recycling in the building (average number of cans recycled in the building per day by the average number of cans sold per day in building vending machines) both during the campaign and for 20 days after the campaign, compared to a 20 day baseline period obtained prior to the campaign. In their second study, the prediction request, "Will you work out at [fitness facility name]" was distributed on a printed mail insert included in gym members' monthly billing statements and newsletters. Similar to the first study, the rate of attendance to the fitness facility was significantly higher for members who received the prediction request insert, compared to those who received either of two control inserts ("Fitness guilt?" or "Work out at [fitness facility name]"). Together, these findings established that SP-based advertisements are an effect method capable of reaching large segments of a consumer population.

Priming an Audience

Prediction requests through advertisements used in Spangenberg et al. (2003) were self-administered. Specifically, the written message was read, and the self-prediction was made, in-private upon exposure to the advertisement. This differs significantly from laboratory SP research where a prediction request is typically delivered by a researcher (i.e., in person, over the phone, or on a handed memo at the end of a study) and participants either verbally make a self-prediction or give a survey response knowing that it will be read by the researcher (c.f. Spangenberg & Greenwald, 1999). Although, a private self-prediction was shown to be effective at motivating subsequent behaviours (Spangenberg et al., 2003), evidence from social psychology suggests that the social influence of the message can be made more salient by creating the perception of a

public self-prediction, thus potentially increasing the efficacy of SP-based advertisements. In addition, public (versus private) commitment making has been shown to help mitigate the attitude-behaviour inconsistency for pro-environmental behaviours (Lokhorst, Werner, Staats, van Dijk, & Gale, 2013).

Several social psychological theories, such as social facilitation (Zajonc, 1965), social comparison (Festinger, 1954), self-presentation (Schlenker, 1980), and self-awareness (Duval & Wicklund, 1972), are based on the common tenet that the presence of others, whether real or imagined, exerts significant social influence on one's behaviours and attitudes in a given context. A number of recent studies, however, have shown that even subtle cues of being observed are sufficient to induce social influence effects, especially for prosocial behaviour (Bateson, Nettle, & Roberts, 2006; Bourrat, Baumard, & McKay, 2011; Ekström, 2012; Ernest-Jones, Nettle, & Bateson, 2011; Powell, Roberts, & Nettle, 2012). In particular, simple images of a pair of eyes or a face peering outward, that evoke the perception of being watched, elicits similar social evaluative effects as the mere presence of an audience. For example, Bateson, Nettle, and Roberts (2006) placed an "honesty box" in a university department coffee room. The authors found that on the weeks when a picture of eyes was posted on the price list above the box, employee contributions for their coffee were nearly three times greater, compared to weeks when a control picture of flowers was posted.

Ernest-Jones, Nettle and Bateson (2011) replicated these findings for littering behaviour of customers in a university cafeteria. Specifically, results showed that on the days when a poster with the picture of eyes was placed on the wall of the cafeteria, the probability of customers leaving their litter on the table reduced by half, compared to a

control picture of flowers. In addition, the authors showed that the effect of the eyes was irrespective of whether the message on the poster was congruent (i.e., asking customers to clean their trays after eating) or incongruent (i.e., a message related to only eating on the premises) with littering behaviour, demonstrating that the eyes did not simply draw greater attention towards the message of the poster (Bateson et al., 2011).

In another field experiment, Ekström (2012) placed either a picture of watching eyes or a control picture of a flower pattern on recycling machines located in 38 stores of a large supermarket chain in Sweden. After consumers deposit their recycling in the machine, they have the option either to retain the earnings or donate the amount to a charity organization, by pressing one of two buttons on the machine. The picture manipulations were posted close to the decision buttons. Ekström found that the amount of donation increased by 30% on the days when the eyes were present, however, this effect occurred only on days when store attendance was relatively low. These results suggest that implicit observation cues either are cancelled out by a strong presence of real people or are less effective as noise in the environment increases due to greater probability of distraction (Ekström, 2012).

Together, these field experiments demonstrate that social influence can be facilitated through the simple priming of eyes. The findings are consistent with literature on direct eye gaze, which shows that eye contact is a prominent social cue and essential in interpersonal interactions (for review Patterson, 1982, 1983). Direct eye gaze, compared to nongazing, can exert social control, elicit compliance, and foster cooperation (Kleinke, 1986), and is also often used for evaluating others or oneself in a given context (Knackstedt & Kleinke, 1990; Patterson, 1983). Self-awareness theory (Duval &

Wicklund, 1972), which deals with the effect of shifts in self-focused attention that occurs from situational factors, may provide additional insight in to a possible mechanism of priming an audience with eyes. Specifically, the theory holds that activation of self-focused attention results in a self-evaluative process, which leads to a comparison between the contextually-relevant aspect of the self (i.e., emotion, attitudes, or behaviour) and related ideals or standards. Self-inconsistencies (similar to cognitive dissonance) become more aversive and lead to *greater* motivation to reduce discomfort by regaining consistency, when people are self-focused (Philips & Silvia, 2005; Silvia, 2002; Silvia & Gendolla, 2001).

Two types of self-focused attention are distinguished in research, private and public self-focus, and are primed using differential methods (Baldwin & Holmes, 1987; Carver & Sheier, 1978; Fenigstein, Scheier, & Buss, 1975; Froming, Walker, & Lopyan, 1982; Wiekens & Stapel, 2010). Private self-focus, activated by showing a person their reflection in a mirror or a photograph or video of themself, makes salient internal aspects of the self (e.g., attitudes, emotions) and leads to behaviour consistent with personal attitudes. In contrast, public self-focus, activated through the presence or perception of an audience, makes salient external or overt aspects of the self (e.g., appearance, mannerisms, behaviour) and leads to behaviour consistent with social norms or expectations regarding appropriate conduct in a given situation (Froming et al., 1982; Wiekens & Stapel, 2010). Increased saliency of social norms and evaluation as a result of public self-focus provides a possible mechanism responsible for the enhanced prevalence of prosocial behaviours in the presence of “watching eyes”, and suggests that the socially

normative influence of SP-based advertisements may be increased by including a similar manipulation.

Accordingly, research suggests that eye contact, not just the mere presence of an audience, is important for inducing public self-awareness and imposing social evaluative concerns, which can lead to increased conformity to context-relevant social norms (Scheier, Fenigstein, & Buss, 1974; Wiekens & Stapel, 2010). Specifically, Scheier, Fenigstein, and Buss (1974) conducted an experiment where men were given the opportunity to aggress against a woman (contrary to societal standards), using shocks that varied in level of intensity to punish incorrect responses made during a learning task. To evoke public self-focus, two audience conditions were used. The first used a passive, unobtrusive audience (two confederates) who simply sat next to the participant. The second audience condition required participants to make periodic direct eye contact throughout the experiment with the passive audience members. Results showed that the presence of an audience reduced aggression in both conditions compared to a control condition, consistent with self-awareness theory. However, the audience condition where direct eye contact was required inhibited aggression more than in the no eye contact condition.

Social neuroscience research shows that direct eye gaze activates particular regions in the brain that are responsible for emotion, social cognition, and theory-of-mind (c.f. Conty, Russo, Loehr, Hugueville, Barbu, et al., 2010). Furthermore, the perception of direct eye gaze also leads to increased arousal, not just in the presence of an actual observer (Hietanen et al., 2008), but also when a simple photograph of a face is shown (Conty et al., 2010). In two experiments, Conty and collegues (2010) showed that

participants who viewed an image of a face with a direct eye gaze on a screen during a visual word-spelling task resulted in increased skin conductance (indicating arousal), compared to faces with either averted eye gaze or closed eyes. Therefore, eye contact may be specifically relevant for activating public self-focus. In addition, this research demonstrated that the actual presence of others is not a necessary condition to elicit self-awareness and related evaluative concerns from direct eye gaze (i.e., through images).

The effect of creating an audience with images of eyes has also been explored for moral judgements. Bourrat et al. (2011) showed that participants who were exposed to a picture of eyes when reading two vignettes describing a moral violation (i.e., falsifying a resume and keeping money from a found wallet) expressed greater disapproval for each transgression (lower ratings for moral acceptability), than participants exposed to a control image. Consistent with self-awareness theory, these findings suggest that the image of eyes activated public self-focus leading to greater conformity to societal standards (Bourrate et al., 2011).

Therefore, using simple imagery of a face peering outward in a direct eye gaze on an SP-based advertisement may enhance the social adjustive nature of the self-prediction, by increasing the saliency of relevant social norms as well as experienced arousal (i.e., dissonance), leading to greater norm-consistent behaviour.

Self-Construal

Markus and Kitayama (1991) define self-construal as the way in which individuals view themselves in relation to others and their social environment. The independent and interdependent self-views have been primarily defined as cross-cultural

variants of Western and Eastern cultures, respectively (Triandis, 1989, 1996; Markus & Kitayama, 1991, 2010). However, self-construal also varies within culture, differentiating regions within a country (e.g., Cohen, Nisbett, Bowdle, & Schwarz, 1996; Kitayama, Ishii, Imada, Takemura, & Ramaswamy, 2006), genders (Cross & Madson, 1997), or groups in terms of socioeconomic status (Snibb & Markus, 2005). Social psychology research indicates that individuals fall along a continuum on both dimensions but possess a predominant self-view, that which is more easily accessible and exerts more influence in an individual's way of thinking and behaviour (Singelis, 1994; Trafimow & Finlay, 1996; Trafimow, Triandis, & Goto, 1991).

In their original seminal paper on self-construal, Markus and Kitayama (1991) discuss that for individuals with an independent self-view, the self is construed as autonomous and distinct from others. Independent selves are defined by internal attributes (i.e., attitudes, preferences, beliefs), and emphasis is placed on maintaining consistency between internal attributes and behaviour. In contrast, for individuals with an interdependent self-view, the self is construed as connected and inseparable from others. Interdependents are defined by their social roles and seek to maintain harmony with interpersonal relationships. Thus, internal attributes are regulated and not viewed as self-defining. Consistency between internal attributes and behaviour is not vital to the self-view. Rather, behaviour is seen as constrained by the situation and driven by the demands of the social environment and in-group goals.

The socially-focused nature of individuals with an interdependent compared to an independent self-view suggests that self-construal will moderate the effect of SP interventions. Normative beliefs about what is socially appropriate or desirable behaviour

in a given situation are a prerequisite for norm-consistent self-predictions (Sprott et al., 2003). Social norm beliefs become activated when a person is asked to predict their future behaviour in a normative context (i.e., "What *should* I do?"), and the likelihood that the self-prediction will be behaviourally fulfilled varies depending on the strength of the belief or the degree to which a person values and uses social norms to guide behaviour (Sprott et al., 2003). Accordingly, Sprott, Spangenberg and colleagues (2003) showed that the strength of one's normative beliefs moderates SP effects. Specifically, behavioural fulfillment after self-prediction was more likely to occur for individuals with stronger social norm beliefs about choosing a healthy snack or attending a health and fitness assessment, compared to those with weaker beliefs. Stronger normative beliefs increase the associated dissonance experienced when one is confronted with prior noncompliance, thus increasing the motivation for norm-consistent future behaviour (Spangenberg et al., 2003).

It follows that SP effects may be greater for individuals who are more interdependent because social norms, above personal attitudes and preferences, are more integral in determining intentions and actual behaviour. Research using a planned-behaviour framework (Ajzen, 1991; Fishbein & Ajzen, 1975) further supports this assertion. For instance, Trafimow and Finlay (1996) asked participants to indicate their intentions to perform 30 normative behaviours (e.g., volunteering, using condoms, recycling, exercising, eating vegetables), and indicate their attitude and subjective norm towards each behaviour. Subjective norms were more predictive of intentions for individuals with interdependent versus independent self-views, after controlling for attitudes. Furthermore, stronger interdependent identity increased the strength of the

subjective norm-intention relation (Trafimow & Finlay, 1996). These findings demonstrate that individuals with more interdependent self-views are under more normative control than those with independent self-views (Trafimow & Finlay, 1996). Consequently, they are expected to be more susceptible to SP effects.

In relation to the cognitive dissonance framework of SP (Spangenberg et al., 2003; Spangenberg et al., 2012), interdependents strive to maintain harmony with interpersonal relationships and in-group goals whereas independents strive to maintain consistency between self-defining internal attributes (Markus & Kitayama, 1991). For an interdependent self, saliency of past behavioural failures to meet valued and internalized social norms made salient from self-prediction should evoke stronger cognitive dissonance, a value-action discrepancy, threatening important aspects of the self-system and leading to greater likelihood of norm-consistent subsequent behaviour to reduce dissonance.

Self-Construal and the Effect of an Audience

Cultural research on self-construal suggests that the effect of SP to motivate norm-consistent behaviour will be increased for interdependents by emphasizing the public nature of the prediction, therefore heightening the threat to valued aspects of the self-concept that lead to cognitive dissonance (Hoshino-Brown et al., 2005; Kitayama, Snibbe, Markus, & Suzuki, 2004). In particular, Kitayama and colleagues (2004) proposed that for independents, dissonance is personal and reflects worry about self-efficacy, competence or other internal attributes. In contrast, for interdependents, dissonance is interpersonal such that worry is related to the potential for social sanction or rejection by important others (i.e., “losing other’s respect, approval, and commitment,”

p. 527). Thus, using an audience prime to activate self-evaluative concerns when exposed to a SP prediction request may be more influential for individuals who are more interdependent.

Research using the free choice dissonance paradigm (Brehm, 1956), provides support for these variations in dissonance due to self-construal. For example, interdependents who made a choice when the potential for public scrutiny was made salient, either by making a choice intended for a close friend or when primed to imagine relevant social others, justified poor choices more—a dissonance reduction strategy (Heinman & Lehman, 1997; Hoshino-Brown et al., 2005; Kitayama et al., 2004; Sakai, 1981). While the choice used in the dissonance paradigm is not socially normative (i.e., choice of a CD or menu item), the sources that elicit dissonance related to self-construal are applicable to SP effects.

Kitayama and Imada (2010) used different methods to prime a social audience while participants made choices in the free choice dissonance paradigm in three experiments. The first study used simple drawings of stick faces with eyes peering outward. The second study used three blackened circles to create a triangle to resemble the shape of a face. The third study used posters of different real faces peering outward to make eye contact, which varied on whether they were perceived as confident, dominant, and influential, or submissive and non-influential. In the first two studies, results showed that interdependent participants were more likely to justify choices when the eyes primes were present during the task, versus when they were absent. In contrast, independent participants were less likely to justify their choices when made in the presence versus absence of the eyes. In a final study, only independent participants completed the

dissonance choice task. Findings revealed that independent participants justified their choices only when the face appeared to be non-influential, whereas a dominant face attenuated justification effects. These findings were consistent with participants' ratings of choice constraint, which showed that independents who made a choice in the perceived presence of influential others viewed this choice as constrained by external social influences. Therefore, they were less likely to view the choice as their true preference, which attenuated the experience of dissonance (Kitayama & Imada, 2010).

Current Research

The primary goal of this research is to investigate whether making a self-prediction more public, through the inclusion of an audience cue in an SP-based advertisement, will improve the efficacy of SP to influence behaviour change for a focal normative behaviour. In addition, this research investigates whether self-construal, and particularly greater interdependence, moderates the effect of SP. Finally, this research aims to extend the application of SP to a consumer-based context for sustainable product consumption.

Hypothesis 1a and 1b

1a) Exposure to an SP text-only advertisement will lead to greater preference for sustainable products, compared to a control advertisement.

1b) Exposure to an SP text with audience advertisement will lead to greater preference for sustainable products, compared to an SP text-only advertisement.

Hypothesis 2a and 2b

2a) Exposure to an SP text-only advertisement will predict greater preference for sustainable products, compared to a control advertisement, for individuals who are more interdependent.

2b) Exposure to an SP text with audience advertisement will predict greater preference for sustainable products, compared to a control advertisement, for individuals who are more interdependent.

Method

Overview

To test the hypotheses two studies were conducted. The purpose of Study 1 was to examine whether the presence of an audience cue when making a self-prediction would influence behavioural intentions for purchasing sustainable household cleaning products more than making a self-prediction in the absence of the cue. The purpose of Study 2 was to investigate whether self-construal moderates the effect of SP when exposed to either a text-only or text with audience prediction advertisement for purchasing sustainable household cleaning products. In addition, Study 1 investigated the influence of a single face audience cue and Study 2 replicates the proposed effect with a group audience cue. Three pretests were first conducted to address important boundary conditions related to the use of SP identified in the extant literature and also to address issues related to constraints shown to result from the perception of an influential audience in dissonance research for individuals who are independent (Kitayama & Imada, 2010).

Behaviour Pretest

Purpose

The weakness or absence of social normative beliefs regarding the focal behaviours used in SP interventions has been shown to attenuate the effect of SP on behaviour change, associated with the underlying process of cognitive dissonance (Spangenberg & Greenwald, 1999; Sprott et al., 2003). The purpose of this pretest was to therefore determine the presence and strength of social normative beliefs in the sampled population for the intended behaviour of purchasing sustainable products.

Participants and Design

Twenty-eight undergraduate students between the ages of 18 and 29 (M_{age} = 21.50, *SD* =2.30; 80% female) were randomly approached at a local university and asked to voluntarily participate in paper-and-pencil study about evaluating different behaviours. The focal behaviour of purchasing sustainable products was included in the survey as one of 10 different behaviours in order to mask the purpose of the pretest.

Measures and Procedure

To assess participants' social normative beliefs about purchasing sustainable products, a 4-item normative belief scale used in previous SP research (Chandon, Smith, Morwitz, Spangenberg, & Sprott, 2011; Sprott et al., 2003) was adapted for the study. Participants were asked to indicate the extent to which they agreed with the following statements using a 7-point Likert-type scale (1 = *strongly disagree* and 7 = *strongly agree*): "Student's you know think it's important to buy environmentally-friendly products," 2) "Student's you know buy environmentally-friendly products," 3) "Professors you know think it's important to buy environmentally-friendly products," and

4) “Professors you know buy environmentally-friendly products”. The mean of all items was used as an index of participants’ normative beliefs regarding sustainable product consumption ($\alpha = .80$). Participants rated their normative beliefs on this scale for each of the 10 included behaviours.

Results

A one-sample t-test showed that the mean scores on the normative belief scale for purchasing sustainable products were statistically higher than the scale midpoint (4), ($M = 4.46$, $SD = 0.99$), $t(27) = 2.47$, $p = .02$, indicating that social norm beliefs regarding purchasing sustainable products existed within the sampled population.

Product Pretest

Purpose

Consistent with previous SP studies that indicate moderate to high prior behaviour frequency can negatively influence SP outcomes (Spangenberg & Greenwald, 1999; Chandon et al., 2011), a product pretest was conducted to select household cleaning products with low purchase frequency for the main product choice task.

Participants, Design, and Procedure

A total of 59 participants between the ages of 18 and 40 ($M_{age} = 21.47$, $SD = 3.26$; 61% male) completed the pretest at the end of an unrelated study for course credit. The study was administered through an online survey service (Qualtrics) in groups of up to 14 participants in a computer laboratory at a local university. Participants were asked to rate their purchase frequency of 10 different products selected from the product category of household cleaning supplies, on a 7-point Likert-type scale (1 = *never purchased this*

product and 7 = *always purchase this product*). The 10 products included: dishwashing liquid, laundry detergent, fabric softener, floor cleaner, paper towel, kitchen garbage bags, stainless steel appliance cleaner, clothing stain remover, window cleaner, and toilet bowl cleaner. Product list order was counterbalanced between participants.

Results

One sample t-tests were conducted using the mean purchase frequency score of each product compared to the scale midpoint (4). Only products that were significantly lower than the midpoint were to be included in the main product choice task. As shown in Table 1, six of the 10 products met this criteria, including stainless steel appliance cleaner, clothing stain remover, window cleaner, toilet bowl cleaner, floor cleaner, and fabric softener. The remaining four products were excluded.

Audience Pretest

Purpose, Participants and Design

To eliminate the potential confound of the audience cue being perceived to have any particular evaluative valence (Kitayama & Imada, 2010), an audience image pretest was conducted to select neutral images of faces for the audience manipulations. Twenty-six undergraduate students between the ages of 18 and 25 (M_{age} = 20.85, *SD* = 1.89; 65.4% female) participated in the computer-based pretest for course credit at a local university. The study used a within-subjects design.

Materials

Images of individual faces were obtained from an online royalty-free stock photography website. Selected images were part of a larger collection of portraits from a

single image contributor on the website, which all displayed the same image quality (300 dots per inch), background color (white), and overall head dimensions. Images were considered for inclusion if the face in the portrait was facing straight-on, was neither highly attractive nor unattractive, and had a neutral facial expression as to not induce any particular emotions. The final set of 12 single portraits selected (seven male and five female faces) represented individuals with a range of physical traits (e.g., hair color, eye color, style) and ages, and were ethnically diverse**.** For the group audience image, the 12 single portraits selected were graphically compiled using Adobe Photoshop into 11 unique images of groups of faces, each group containing 4 to 6 individual portraits that were mixed-sex.

Procedure

In the computer-based survey, participants were asked to rate their impressions of all 23 images, including each individual portrait and each group image, on seven different dimensions using a 7-point Likert-type scale (1 = *strongly disagree* and 7 = *strongly agree*). The dimensions rated by participants included: confidence, influence, attractiveness, dominance, criticalness, supportive, and controlling. The order of image presentation and list of dimensions presented for rating were counterbalanced across participants.

Results

One-sample t-tests were conducted using the mean values of each of the seven characteristics rated compared to the scale midpoint (4 = *neither agree nor disagree*) for each single portrait and group image. Images that were not significantly higher than the midpoint on any of the seven characteristics were considered for inclusion. For the single

portrait images, one male and two female images met this criterion. Paired-sample t-tests were conducted comparing the male image to each of the two female images on all seven characteristics. As shown in Table 2, only one of the two female images did not significantly differ from the male image on any characteristic. These two images were therefore selected as the single audience manipulations for Study 1. For group images, only two of the 11 groups met the criterion. Paired-sample t-tests comparing each of the two groups' seven characteristic ratings indicated that they did not significantly differ on any characteristic. Therefore, the image selected for inclusion in the group audience manipulation for Study 2 was randomly selected from the two images. Results of the paired-sample t-test for all characteristics for the two groups are presented in Table 3.

Study 1

Participants and Design

A total of 101 participants between the ages of 18 and 31 (M_{age} = 20.93, *SD*= 1.93; 58.2% male) completed the study for course credit. All participants were fluent in English reading and writing skills. The study employed a between-subjects design with three message conditions: text-only prediction, text with audience prediction, and control. The study was administered through an online survey service (Qualtrics) in groups of up to 14 participants in a computer laboratory at a local university. Participants were randomly assigned to a condition.

Materials

Message manipulation. An SP-based advertisement used in prior research (Spangenberg et al., 2003) was adapted for the purpose of this study. The advertisements were jpg images (600 x 341 pixels) created to be viewed on the computer monitors in the

laboratory. The header of the advertisement displayed the name and logo of the organization associated with the message. Environment Canada was chosen as the organization because it corresponded with the content of the message (purchasing sustainable products), and was similar to the types of organizations shown to be effective in prior SP research (Spangenberg et al., 2003; Spangenberg & Sprott, 2006). The experimental text was written in the center body of each advertisement. The text-only advertisement read, "Ask yourself: Will you purchase environmentally-friendly household cleaning products?". Two text with audience advertisements were created, one using the female and one using the male portrait selected in the pretest. The text with audience advertisements were identical to the text-only advertisement except the portrait was included to the left of the prediction text. The control advertisement contained text intended to be as close to the experimental text as possible without explicitly asking for a prediction, and simply read "Purchase environmentally-friendly household cleaning products" (see Appendix A through C for advertisements).

Product images. Six individual shelf-display images were created using the six household cleaning products selected from the product pretest. Each shelf-display contained a pair of environmentally-friendly and traditional products that were visually identical except for the environmental attribute on the sustainable product option (e.g., "biodegradable", "phosphate free"), which was graphically added to the original image of each traditional product. Fictitious brand names were used across all products to control for prior experience with or knowledge of the brands. Similar to market pricing for green products (Osak, 2011), the brand in each product pair that incorporated an environmentally-friendly attribute displayed a $0.10 price premium over the non-

environmental product (see Table 4 for product prices). The difference in product prices was also included to create a small cost for participants associated with choosing the environmental product, to reduce a potential ceiling effect. An example of the product shelf-display images is presented in Appendix E.

Measures

Dependent variable. Preference for the sustainable product within each of the six household cleaning product pairs was measured. After the presentation of each product pair, participants were asked to indicate on a 9-point bipolar scale anchored by [Brand A] and [Brand B], which brand in each pair of products they were more likely to purchase. Half of the product pairs presented the product with environmental attributes on the left of the shelf-display (Brand A), and half of the product pairs presented it on the right (Brand B). After reverse scoring three items, a mean product preference score was calculated from all six products rated ($\alpha = .78$; $M = 5.01$, $SD = 2.00$). Higher scores indicated greater preference for sustainable products.

Procedure

The study was advertised as a brand evaluation study. The computer-based experiment first asked participants to complete basic demographics. Similar to prior SP research (Spangenberg et al., 2003), the message manipulation was presented next under the guise of an advertisement recall task in order to help ensure participants' attention towards the copy of the advertisement (i.e., the prediction request). Before viewing the advertisement, participants were informed that they would be subsequently asked to indicate their recall for the advertisement content. Participant then viewed the condition specific advertisement. In the text with audience condition only, male participants were

branched to the male audience advertisement and female participants to the female audience advertisement, based on initial demographic responses. This was to control for any cross-sex effects. Following the presentation of the advertisement, participants completed two questions to assess their level of recall for the topic and the copy of the advertisement, which served as message manipulation checks. Participants then completed a 30-minute unrelated filler task, followed by the product choice task.

In order to contextualize the product choice task, participants were first instructed to imagine they were on a shopping trip at a local store and they had a list of six household cleaning products that they needed to purchase for their own use. Subsequently, participants viewed each of the six shelf-display images containing product pairs. The order of product categories displayed was counterbalanced across participants. In addition, the order of presentation of the sustainable and the traditional product was reversed in half of the shelf-display pairs to control for inferences made from horizontal shelf-position (Valenzuela & Raghubir, 2010). Participants then completed additional demographics and two manipulation checks. Specifically, to assess participants' attempts to "fake good" or manage self-presentation during the survey, the Social Desirability Scale -Short Form (Steenkamp, DeJong, & Baumgartner, 2010; adapted from Crown & Marlow, 1960) was administered. The scale is comprised of two 10-item subscales for moralistic response tendencies (MRT) and egoistic response tendencies (ERT). The MRT and ERT subscales measure a person's tendency to engage in socially desirable behaviours either in an agency-related context (e.g., one involving dominance, autonomy, control) or a communal-related context (e.g., one involving affiliation, belonging, approval), respectively. Questions are rated on a 7-point Likert-

type scale (1 = *strongly disagree* and 7 = *strongly agree*). Lastly, the manipulation check for the purpose of the study was completed.

Results

Manipulation Checks

To determine whether participants paid attention to the advertisement, participants' overall responses to the advertisement topic and copy recall questions were evaluated. For the topic recall, participants that identified any major theme in the advertisement, such as Environment Canada, household cleaning products, or purchasing sustainable products, were considered correct. For the copy recall, participants who recalled the overall message either verbatim or using slightly altered language (e.g., "Will you purchase eco-friendly cleaning products for the house") were considered correct. In sum, six participants were identified as having not read the advertisement and were removed for the main analysis ($n = 95$). Responses to the study purpose manipulation check were also evaluated and indicated that no participant was aware of the hypothesis or main purpose of the study.

Preliminary Analysis

In order to control for cross-sex effects that may have influenced the perception of the audience manipulation, participants in the text with audience condition viewed sex-matched audience cues. To assess whether differences in the audience image (male or female) presented in this condition influenced product preference, a one-way ANOVA was conducted. Results indicated no statistically significant difference between males ($M = 5.34$, $SD = 2.32$) and females ($M = 6.55$, $SD = 1.78$) on product preference, $F(1, 29) = 2.66$, $p > .05$. Therefore, product preference scores from both the male and female

audience conditions were aggregated into an overall text with audience condition in the main analysis. To assess whether social desirability influenced product preference, a multiple regression was conducted using purchase intention as the criterion variable and the MRT (α = .45; *M* = 3.91, *SD* = 0.82) and ERT (α = .58; *M* = 4.27, *SD* = 0.70) subscale scores of the Social Desirability Scale (Steenkamp et al., 2010) as independent variables. Results indicated that neither the MRT nor ERT subscales were statistically significant predictors of preference for sustainable products ($p > .05$), and therefore social desirability did not influence product preference.

Hypothesis 1a and 1b

To test the hypotheses that 1a) exposure to an SP text-only advertisement would lead to greater preference for sustainable products compared to a control, and that 1b) exposure to an SP text with audience advertisement would lead to greater preference for sustainable products than a text-only advertisement, a one-way ANOVA was conducted. Message condition (text-only prediction, text with audience prediction, control) served as the independent variable and preference for sustainable products served as the dependent variable. Results revealed a significant group difference, $F(2, 92) = 3.90$, $p = .02$. Planned contrasts revealed that participants had greater preference for sustainable products in the text-only prediction condition (*M* = 5.97, *SD* = 2.12) and the text with audience condition (*M* = 7.15, *SD* = 2.08), compared to the control condition (*M* = 5.83, *SD* = 2.28), but only the text with audience condition was significantly different from the control ($p = .05$). Therefore, findings did not support hypothesis 1a. However, preference for sustainable products was marginally significantly higher in the text with audience condition

compared to the text-only condition (p = .07), providing partial support for hypothesis 1b. Figure 1 shows the effect of message condition on preference for sustainable products.

Study 2

Participants and Design

One hundred and seventy two undergraduate students between the ages of 18 and 43 (M_{age} = 21.34, SD = 3.53; 57.0% male) participated in the study for course credit. All participants were near or perfectly fluent in English reading and writing skills. The study used a between-subjects design with three message conditions (text-only prediction, text with audience prediction, and control). The study was administered through an online survey service (Qualtrics) in groups of up to 14 participants in a computer laboratory at a local university. Participants were randomly assigned to a condition.

Materials

Message manipulation. The SP advertisement manipulation from Study 1 was replicated for all three message conditions. However, the audience image included in the advertisement for the text with audience condition was replaced with the group image selected from the pretest. Therefore, all participants in this condition viewed the same advertisement. The text with group audience advertisement is presented in Appendix D.

Product choice images. The six shelf-display images presented in Study 1 were adapted for this study. As shown in Table 4, the price premium for the non-environmental product was increased from $0.10 to 15% over the traditional product in each pair, to better reflect current market pricing (Osak, 2011).

Measures

The *Twenty-Statements Test* (TST; Kuhn & McPartland, 1954) is a task that measures independent and interdependent self-construal. Participants are given the following instructions: "Please write twenty different statements to the simple question "Who am I?" in the 20 spaces below. Write your answers in the order they occur to you. Don't worry about logic or importance." Respondents are given up to five minutes to complete as many of the 20 statements as they desire before moving on. A method of coding developed by Trafimow et al. (1991) can be used to score responses. Specifically, all 20 statements made by each respondent are coded for number of idiocentric, group, and allocentric statements. Idiocentric statements include those that refer to a personal attitude, belief, quality, or behaviour (e.g. "I am smart"). Group statements include those that refer to a group or demographic category where members would be likely to experience a common fate (e.g. "I am a sister," or "I am Canadian"). Allocentric statements include those that refer to a quality of friendship or responsiveness to others or sensitivity to the opinions of others (e.g., "People think I am funny"). A score can be calculated by subtracting the number of idiocentric responses made by the number of group statements made for each respondent. Higher values indicated greater interdependence.

Procedure

The general procedure from Study 1 was replicated. However, following initial demographic questions, participants completed the TST (Kuhn & McPartland, 1954). Participants then went on to view the condition specific message manipulation. After the 30 minute filler-task, participants completed the same product choice task, the Social

Desirability Scale (Steenkamp et al., 2010), and finally a manipulation check for the purpose of the study.

Results

The TST was coded by two independent raters who were blind to the study hypotheses. A Krippendorff's alpha reliability coefficient was calculated across all coded statements between raters (α = .87). All discrepancies in coding were discussed and resolved between the two raters (obtaining 100% agreement) prior to calculating final TST scores.

Manipulation Checks

To determine whether participants paid attention to the advertisement, participants' overall responses to the advertisement topic and copy recall questions were evaluated as in Study 1. In sum, 23 participants (11.7%) were identified as having not read the advertisement. Responses to the study purpose manipulation check were also evaluated and indicated that only one participant guessed the general purpose of the study. These participants were excluded from further analysis (final n = 152; text-only prediction: n = 47; text with audience prediction: n = 49; control: n = 56).

Preliminary Analysis

To assess whether social desirability influenced product preference, a multiple regression was conducted using preference for sustainable products as the criterion variable and the MRT (α = .66; M = 4.05, SD = 0.86) and ERT (α = .55; M = 4.15, SD = 0.69) subscale scores of the Social Desirability Scale (Steenkamp et al., 2010) as independent variables. Results indicated that social desirability did not significantly

influence product preference as neither the MRT nor ERT subscales were statistically significant predictors of preference for sustainable products ($p > .05$).

Hypothesis 2a and 2b

To test the hypotheses that exposure to either 2a) a text-only or 2b) text with audience SP advertisement would predict greater preference for sustainable products compared to a control for participants who were more interdependent, a multiple regression analysis was conducted. Preference for sustainable products ($\alpha = .78$; $M = 5.01$, $SD = 2.00$) served as the criterion variable. Two dummy coded variables for message conditions were created (text-only prediction = 1, otherwise = 0; text with audience prediction = 1, otherwise = 0) and entered as independent variables in addition to scores on the TST for self-construal. Two 2-way interactions were also created between the TST and each of the condition variables and entered last. The overall model predicting preference for sustainable products was statistically significant, $F(5, 146) = 2.95$, $p = .01$, $R^2 = .09$. Results showed a marginally statistically significant main effect of text-only prediction ($\beta = .93$, $p = .11$) and a significant main effect of text with audience prediction ($\beta = 1.59$, $p = .01$) on preference for sustainable products, indicating that participants in both prediction conditions had greater preference for sustainable products than those in the control, replicating study 1 findings for hypothesis 1b and providing partial support for hypothesis 1a. There was no statistically significant main effect of TST on preference ($\beta = -.01$, $p =$ n.s.). In addition, the interaction between TST and text-only prediction was non-significant ($\beta = .01$, $p =$ n.s.). Therefore, hypothesis 2a was not supported. However, the interaction between TST and text with audience prediction was statistically significant ($\beta = .11$), $F(1, 146) = 5.07$; $p = .03$, $R^2\Delta = .03$.

To understand the interaction, the Johnson-Neyman technique was used to estimate values of TST where the conditional effect of text with audience on preference for sustainable products transitions between statistically significant (at $\alpha = .05$ level of significance) and non-significant. As presented in Table 5, the value of the TST that defined the Johnson-Neyman region of significance was -7.72, where values above this point were statistically significant but values below were non-significant. Moreover, preference for sustainable products in the text with audience prediction and control conditions was not significantly different for individuals who scored below -7.72 on the TST. However, preference for sustainable products was significantly different for individuals who scored equal to or above -7.72 on the TST. In support of hypothesis 2b, these findings indicate that the more interdependent a person is, the greater the influence of text with audience prediction on preference for sustainable products.

Discussion

Self-prophecy has been shown to be a robust method for increasing the prevalence of socially normative behaviours. The results from the current research add to this evidence, by extending the application of SP-based messages to increasing choice for sustainable products. The goal of the current research was to investigate factors that might strengthen the socially adjustive nature of an SP-based advertisement. First, it was predicted that the effect of an SP advertisement with an audience cue would improve preference for sustainable products, compared to a text-only SP advertisement. In support of this hypothesis, results from study 1 showed preference for sustainable products was greater when an audience cue was present versus absent on an SP advertisement. Furthermore, study 2 showed that an SP advertisement with an audience cue was a

stronger predictor of preference for environmentally-friendly products than a text-only SP advertisement, when compared to a control. The second set of hypotheses predicted that differential effects of an SP advertisement (with or without an audience cue) on product preference would occur for those who were more interdependent. These hypotheses were partially supported. Specifically, study 2 results showed no interaction between exposure to a text-only SP advertisement and degree of interdependence on product preference, suggesting that the effect of a traditional SP message is not moderated by self-construal. As predicted, however, study 2 findings showed a significant interaction between degree of interdependence and effect of a SP advertisement that included an audience cue. Closer examination of this effect showed that the more interdependent an individual is, the more an SP advertisement with an audience cue influences preference for sustainable household products. Together, these findings demonstrated that a simple audience cue included in an SP-based advertisement can have an additive effect on subsequent behaviour fulfillment, and that this effect is greater for individuals who are more interdependent.

The effect of an SP text-only advertisement on purchasing environmental household cleaning products, compared to a control advertisement absent of a prediction request, was also shown in two studies providing support for the first hypothesis. Although the difference between the text-only prediction and control conditions in study 1 was non-significant, the means were in the expected direction, and study 2 demonstrated a marginally significant main effect of text-only prediction on preference for sustainable products, compared to a control. In both studies, however, an SP

advertisement with an audience cue significantly influenced preference for sustainable products, compared to the control.

Hypotheses 1a and 1b

The general finding that an SP message increased the focal behaviour in the current studies compared to a control message replicates prior research and reiterates the effect of SP to influence behaviours in a normative context (Spangenberg et al., 2003, Spangenberg & Sprott, 2006; Sprott et al., 2004). Moreover, this research shows the potential for targeting sustainable consumption behaviours of consumers in a wide-spread marketing campaign using SP-based advertisements. The finding that the influence of an SP text-based advertisement on normative behaviours can be enhanced by using subtle social evaluative cues, such as a picture of a non-influential face or group of faces making eye contact, is a unique contribution to the extant literature. This supports recent field experiments showing that "watching eyes" can have a significant social influence on one's behaviours and attitudes in a prosocial and cooperative direction. (Bateson, Nettle, & Roberts, 2006; Bourrat, Baumard, & McKay, 2011; Ekström, 2012; Ernest-Jones, Nettle, & Bateson, 2011; Powell, Roberts, & Nettle, 2012). This result is consistent with the notion that public self-awareness was activated by the audience cue, which increased the saliency of social norms and lead to greater negative arousal and motivation to reduce it (i.e., greater preference for sustainable products) (Philips & Silvia, 2005; Silvia, 2002; Silvia & Gendolla, 2001). Coupled with a self-prediction request, the audience cue appears to make the commitment to engage in the behaviour more public, resulting in greater likelihood of behavioural change.

The effect sizes found in the current studies for preference for sustainable household products (e.g., study 2, $r = .03$), however, were not as high as effect sizes reported when using other normative behaviours, such as attending a health assessment ($r = .38$; Spangenberg et al., 2006), gym attendance ($r = .27$; Spangenberg et al., 2003), or volunteering time to a charity ($r = .35$; Sherman, 1980). This is not largely inconsistent with the literature on pro-environmental behaviours. In comparison to non-environmental behaviours used in prior SP studies, antecedents of pro-environmental behaviours include a host of psycho-social, awareness, and contextual factors that interact and influence intentions to engage in pro-environmental action, making these types of behaviours particularly difficult to influence (Bamberg & Moser, 2007; Pelletier, 2002; Whitmarsh & O'Neill, 2010). Although SP is effective at evoking immediate intention or goal setting toward a behaviour, for pro-environmental behaviours such as sustainable product consumption, a text-based SP message may be only satisfactory at leading to measurable behaviour change compared to other types of normative behaviours.

An alternative explanation for the smaller effect size (Cohen, 1988) of SP on preference for sustainable products in the studies presented here may be that social norms in the current sample for purchasing these types of products were not sufficiently high. Pretest results showed that social normative beliefs were higher than a midpoint average on the measure used, however, the mean value indicated that beliefs were not particularly strong. Considering that SP is intended, in part, to make salient relevant social norms for the focal behaviours, which is necessary to induce dissonance-motivating action (Spangenberg et al., 2012), moderate to low social norm beliefs in the current sample may not have been sufficient to obtain stronger effects consistent with those reported

from other normative behaviours. Nevertheless, research shows that engaging in behaviour even once makes it more likely that an individual will continue to engage in that behaviour in the future (Aarts, VerPlanken, & Knippenberg, 1998). Therefore, small increases in an individual's propensity to purchase green products from self-prediction may result in larger, lasting changes. Furthermore, repeated exposure to this type of advertising may also increase the effect of SP on purchasing behaviours over time (van Kerckhove, Geuens, Vermeir, 2008).

Hypothesis 2a and 2b

It was expected that individuals who were more interdependent would show greater preference for sustainable products when exposed to an SP advertisement with an audience cue. This was supported and is consistent with cultural research on self-construal. Moreover, for individuals who are interdependent, increasing the public nature of a choice evokes stronger cognitive dissonance, which leads to greater attempts to reduce dissonance (Heinman & Lehman, 1997; Hoshino-Brown et al., 2005; Kitayama & Imada, 2010; Kitayama, Snibb, et al., 2004). In the case of SP in the current studies, the reduction strategy was to increase preference for sustainable products. However, it is important to note that for individuals who were highly independent the audience cue attenuated the effect of SP on product choice. This is contrary to findings from Kitayama and Imada (2010) that showed that independents were only negatively influenced by the presence of an influential and dominant face during the choice task, but not a non-influential face. In the current studies, images of either a single face or group of faces were intentionally selected due to low ratings of influence, dominance, criticalness, and other negative perceptions. Nonetheless, highly independent individuals may simply be

more sensitive to any type of evaluative or persuasion cue that is perceived to constrain their true preference. This is supported by the fact that the audience cue did not attenuate preference for sustainable products for participants who were moderately independent, suggesting that the presence of the face itself and not it being perceived as influential affected highly independent individuals. This should be a consideration in future studies.

Although it was expected that individuals who were more interdependent would also show greater preference for sustainable products when exposed to a traditional SP text-based message due to greater salience and reliance on valued social norms, this was not supported. One possible explanation may come from the dissonance view of SP. Specifically, dissonance evoked from self-prediction is the result of a value-action discrepancy, whereby both relevant social norms and one's past noncompliance become simultaneously salient (Spangenberg et al, 2012). For individuals who are interdependent, their behaviour is primarily driven by in-group goals and contextual social standards of conduct as to maintain interpersonal harmony (Markus and Kitayama, 1991). It is therefore possible that individuals in the sample who were more interdependent had greater prior norm-consistent behaviour as a baseline. Thus, a prediction request would not necessarily result in greater dissonance because the prior action made salient would not be particularly discrepant from the value. It is unlikely, however, that any individual whether highly interdependent or not, behaves consistently 100% of the time, and therefore some memories of prior failure to live-up to social norms were likely still made accessible from self-prediction for interdependents. This would explain an overall effect of text-only prediction requests on behaviour as well as a non-significant interaction with self-construal in the current research.

An alternative explanation also related to the dissonance view of SP is that individuals who are more interdependent are less likely to internalize their past behavioural failures to meet social expectations, attenuating the dissonance expected to result from self-prediction. Similar to individuals high on self-monitoring ("the extent to which people regulate their self-presentation by tailoring their actions in accordance with immediate situational cues," Lennox & Wolfe, 1984, p. 1349), individuals who are interdependent do not view their behaviour as self-defining but rather a function of the social context (Markus & Kitayama, 1991). This idea is consistent with findings from Spangenberg and Sprott (2006), who showed that individuals who were low self-monitors (compared to high) were more likely to respond to a self-prediction by changing subsequent behaviours, indicating greater dissonance. The authors posited that those who were higher on self-monitoring did not internalize their prior norm-inconsistent behaviours due to the perception that their behaviour is constrained by the social context rather than being diagnostic or reflecting internal attributes (low self-monitors). The absence of self-attribution for past behaviours consequently mitigated dissonance from self-prediction, consistent with self-monitoring theory (Spangenberg & Sprott, 2006). In this sense, however, one would expect the effect of SP on behaviours to be *lower* for individuals who are interdependent (versus independent), like those high on self-monitoring, but this was not the case in the current research.

Limitations and Future Research

There are a number of limitations in the current research. First, this research explored SP for sustainable products that were low on purchase frequency. While research shows that moderate to low prior experience with a behaviour creates optimal

conditions for SP-based interventions (Chandon, et al, 2011; Spangenberg & Greenwald, 1999), future research could explore whether more frequently purchased products are appropriate for SP-related advertising. Furthermore, the current research used a utilitarian and relatively non-conspicuous product category, household cleaning products. Based on the current findings, it is possible that products where consumption is more conspicuous, such as organic food, electric vehicles, or vegan leather handbags, may serve to enhance the effect of SP in a similar way as an audience cue. In fact, this research suggests that any cue that heightens the social evaluative nature of the SP-based advertisement may serve to increase its efficacy. Currently, only text-based advertisements have been explored as a mass-communicated strategy. Delivery of SP-based messages through other media, such as radio or television commercials may be especially suited to this type of advertisement as the perception of an animated voice or person delivering the message will likely improve conformity. Future research could explore these other methods for priming evaluative concerns. Second, this research did not assess the underlying process responsible for the added effect of the presence of an audience in SP. The literature supports a dissonance-based view of "watching eyes", which occurs from heightened public self-awareness (Philips & Silvia, 2005; Scheier, Fenigstein, & Buss, 1974; Wiekens & Stapel, 2010). Future research could directly investigate this and other mechanisms to elucidate the topic.

A second limitation of the current research relates to the potential and independent role of the audience cue on behaviour, rather than a SP-based effect. It is plausible that the audience cue alone was responsible for the effects on behaviours, rather than a collective effect of SP and perceived audience. However, considering the effect of

the text-only advertisement on behaviours was observed in both studies, it is unlikely that the audience cue was the crucial influence on product preference, but further research is required. Also, although this research investigated both a single face and a group of faces as an audience manipulation, each was evaluated in a separate study. Future research could compare effects of each type of audience cue to evaluate whether a group image exerts more social influence on choice than a single face in the context of SP.

Finally, the current research used behavioural intention measures, not actual behaviour, as a dependent variable. This is consistent with common methods for administration of SP in the laboratory, whereby intentions and/or commitment to engage in the focal behaviour is used as a proxy for behaviour (Spangenberg & Sprott, 2006; Spangenberg & Greenwald, 1999; Sprott et al., 2003). Furthermore, intentions and commitment towards behaviours have been shown to be strong predictors or antecedents of actual behaviour (Ajzen, 1991; Ajzen & Fishbein, 1980; Gollwitzer, 1999). Nevertheless, future research is needed to examine the generalizability of these effects for actual purchasing behaviours of consumers in a real-world setting.

Conclusions

Concern for the environment often does not translate into congruent action, such as the case of sustainable product consumption. However, as more and more companies extend product lines to meet the growing demands for environmentally-safe products, viable marketing techniques are required to bridge this gap between consumer attitudes and actual purchasing behaviours. This research demonstrates that simple self-prophecy-based marketing strategies have the potential to reach consumers and influence their purchasing decisions through reinforcing social expectations to act in an

environmentally-conscious way. Furthermore, this research provides unique evidence that the delivery of an SP-based advertisement can be improved through the use of an audience cue, thereby strengthening the social evaluative nature of the prediction request, and the likelihood of norm-consistent future action.

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Table 1

Product Pretest: Mean Purchase Frequency Ratings for Household Cleaning Products

Product	*M* (*SD*)	*t*
Dishwashing liquid	3.94 (2.14)	-0.30
Laundry detergent	4.13 (2.19)	0.66
Stainless steel appliance cleaner	2.24 (1.72)	-10.08**
Clothing stain cleaner	3.21 (2.01)	-4.30**
Window cleaner	3.40 (2.07)	-3.16*
Toilet bowl cleaner	3.25 (1.98)	-4.18**
Paper towel	4.34 (2.16)	1.73
Floor cleaner	3.13 (2.04)	-4.67**
Fabric softener	3.36 (2.08)	-3.36*
Kitchen garbage bags	4.12 (2.26)	0.56

Note. $n = 121$. Critical test value = 4. Degrees of Freedom for all one-sample tests = 120.

* $p < .01$. ** $p < .001$.

Table 2

Audience Pretest: Mean Ratings for Male and Females 1 and 2

Rating	Male	Female 1[a]	Female 2
Confidence	3.85 (1.43)	3.69 (1.59) 0.51	4.54 (1.66) -1.70*
Influence	3.58 (1.50)	3.85 (1.54) -0.79	4.38 (1.58) -1.91*
Attractiveness	3.19 (1.55)	3.12 (1.68) 0.30	3.54 (1.61) -1.22
Dominance	3.62 (1.58)	3.77 (1.61) -0.47	4.12 (1.61) -1.79*
Criticalness	3.96 (1.48)	3.85 (1.59) 0.35	4.23 (1.31) -1.02
Supportive	4.12 (1.58)	4.38 (1.58) -0.73	4.54 (1.68) -0.95
Controlling	3.73 (1.54)	3.92 (1.38) -0.62	4.35 (1.62) -1.55

Note. $n = 26$. Standard deviations appear in parentheses beside means. Test value for paired *t*-tests appear below means. Degrees of Freedom for all paired tests = 25.

[a] Female image selected for Study 1. * $p < .05$.

Table 3

Audience Pretest: Mean Ratings for Groups 1 and 2

Rating	Group 1[a]	Group 2	*t*
Confidence	4.31 (1.54)	4.04 (1.54)	0.94
Influence	4.00 (1.65)	4.27 (1.40)	-0.79
Attractiveness	3.81 (1.77)	3.54 (1.50)	1.19
Dominance	4.19 (1.47)	4.23 (1.61)	-0.13
Criticalness	4.31 (1.64)	4.08 (1.47)	0.80
Supportive	3.88 (1.56)	3.92 (1.44)	-0.12
Controlling	3.92 (1.64)	4.15 (1.46)	-0.65

Note. $n = 26$. Standard deviations appear in parentheses below means. Degrees of Freedom for all paired tests = 25.

[a] Group image selected for Study 2.

Table 4

Traditional and Environmental Product Prices

Product	Traditional	Environmental	
		Study 1[a]	Study 2[b]
Clothing stain remover	$5.09	$5.19	$5.86
Window cleaner	$2.97	$3.07	$3.42
Stainless steel appliance cleaner	$7.88	$7.98	$8.63
Toilet bowl cleaner	$3.39	$3.49	$3.92
Floor cleaner	$4.47	$4.57	$5.14
Fabric softener	$6.19	$6.29	$7.12

Note. [a] Traditional product price plus $0.10. [b] Traditional product price plus 15%.

Table 5

Johnson-Neyman Region of Significance for the Interaction

					95% CI (β)	
TST	β	*SE*	*t*	*p*	*LL*	*UL*
-20.00	-0.53	0.62	-0.85	0.40	-1.76	0.70
-18.00	-0.32	0.55	-0.57	0.57	-1.41	0.78
-16.00	-0.11	0.49	-0.22	0.83	-1.07	0.86
-14.00	0.11	0.44	0.24	0.81	-0.76	0.97
-12.00	0.32	0.40	0.80	0.43	-0.47	1.11
-10.00	0.53	0.38	1.39	0.17	-0.23	1.29
-8.00	0.74	0.39	1.91	0.06	-0.02	1.51
-7.72[a]	0.77	0.39	1.98	0.05	0.00	1.54
-6.00	0.95	0.42	2.30	0.02	0.13	1.78
-4.00	1.17	0.46	2.53	0.01	0.26	2.08
-2.00	1.38	0.52	2.65	0.01	0.35	2.41
0.00	1.59	0.59	2.71	0.01	0.43	2.75
2.00	1.80	0.66	2.72	0.01	0.49	3.11
4.00	2.01	0.74	2.72	0.01	0.55	3.48
6.00	2.23	0.82	2.71	0.01	0.60	3.85
8.00	2.44	0.91	2.69	0.01	0.65	4.23
10.00	2.65	0.99	2.67	0.01	0.69	4.62
12.00	2.86	1.08	2.65	0.01	0.73	5.00
14.00	3.07	1.17	2.63	0.01	0.76	5.39
16.00	3.29	1.26	2.61	0.01	0.80	5.78
18.00	3.50	1.35	2.59	0.01	0.83	6.17
20.00	3.71	1.44	2.58	0.01	0.87	6.56

Note. TST = Twenty-Statements Test (Kuhn & McPartland 1954); CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

[a] TST value defining region of significance.

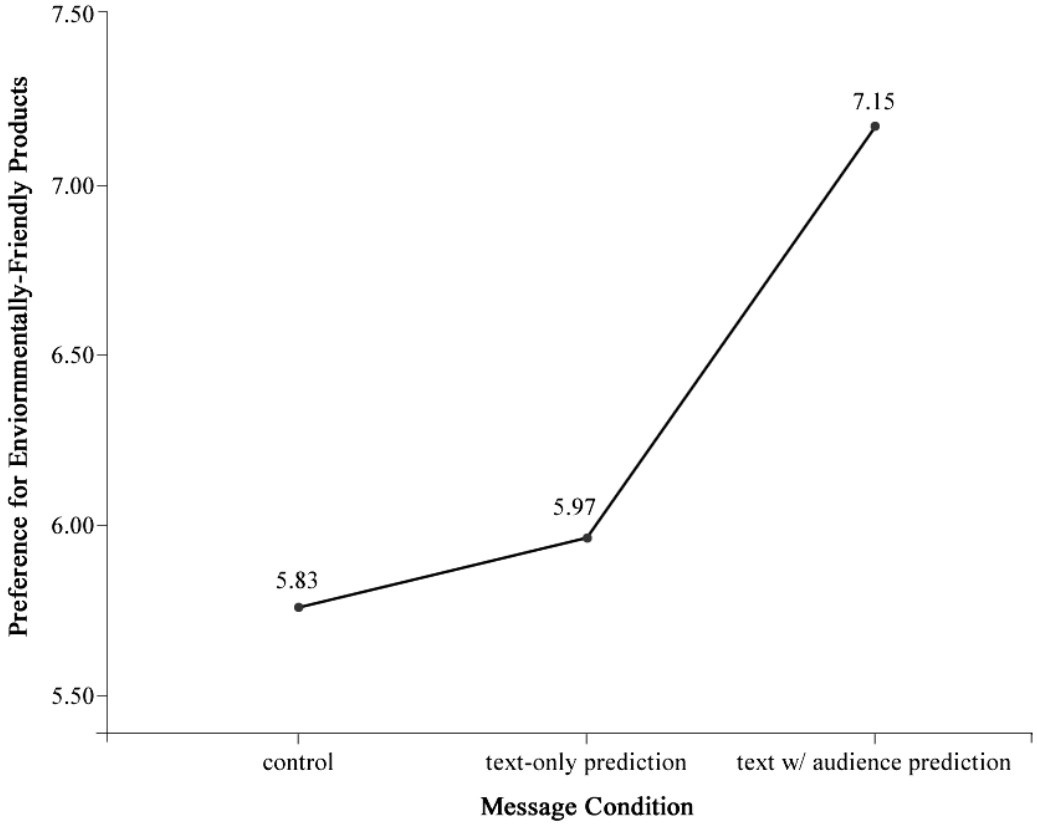

Figure 1. Effect of message condition on preference for sustainable products. Values above points represent the condition mean.

Appendix A

Control Advertisement


Environment Canada
Purchase enviromentally-friendly
household cleaning products.

Appendix B

Text-Only Advertisement


Environment Canada
Ask Yourself:
Will you purchase enviromentally-friendly household cleaning products?

Appendix C

Single Audience Advertisements

Environment Canada

Ask Yourself:
Will you purchase enviromentally-friendly household cleaning products?

Environment Canada

Ask Yourself:
Will you purchase enviromentally-friendly household cleaning products?

Appendix D

Group Audience Advertisement


Environment Canada
Ask yourself: Will you purchase enviromentally-friendly household cleaning products?

Appendix E

Example Shelf-Display Image from the Product Choice Task


Eco-Friendly
STAINS GONE. GUARANTEED!*
Terrende
Biodegradable
ACTION FOAM
Original
STAINS GONE. GUARANTEED!*
Degossa
Original
ACTION FOAM
$5.19
$5.09